

the more important feathers have filamentous prolongations, and these often form a sort of fringe to the rounded end of the feathers. In the Goshawk these barb-extensions are delicate and tapering, but they are sometimes quite blunt as in *Aquila navia*. Where these filamentous prolongations occur (*i. e.* on the secondaries in young Goshawks) the pre-pennæ down-tufts are carried on the extremities of the central ones, opposite the end of the shaft. From this fact it seems probable that these barb-prolongations form the degenerate remains of a once distinct mesoptile plumage, a generation of plumage which may be still found in a fairly complete form in the Tawny Owl. It should be noted that where the barb-prolongations are wanting, as always appears to be the case with the lesser contour-feathers on the crown, back, etc., the pre-pennæ down-tufts are sessile (fig. 17, p. 875).

A close examination of the neossoptiles in different genera reveals considerable structural variation in these feathers. In the present paper I have only hinted at a few of these differences, but I hope at some future date to make use of the data and material in my possession, and also to elaborate my notes on certain nidifugous species.

[NOTE.—The figures are all larger than natural size. Unfortunately, owing to the fact that they were drawn direct from life at different times, the scale to which they have been enlarged varies in almost every case.]

XXXIII.—*Notes on the Birds of North-East Chihli, in North China.* Part II.* By J. D. D. LA TOUCHE, C.M.Z.S., M.B.O.U.

73. *Merula hortulorum* (P. Sel.).

Turdus hortulorum and *Turdus pelios* D. & O. p. 151.

Merula hortulorum La T. p. 571.

The Grey-backed Ouzel is of irregular occurrence at Chin-wangtao. In 1911, I saw three on the 29th of April and 1st of May, but did not meet with any others until 1914,

* For Part I, *vide supra*, pp. 629-671.

when I saw three or four at the port on the 2nd of May, one of which I shot. On the 6th of May following I secured another. My collector brought me one taken by him that spring at Shanhaikuan on the 24th of April. On the 30th of April, 1915, I saw an adult male running about on the bluff.

Turdus hortulorum Selater of David & Oustalet's 'Oiseaux de la Chine' is the immature male, while *Turdus pelios* of the same authors is the adult male, which has no spots on the throat and breast. I do not know of any evidence establishing this bird as a resident in south-east China. It is a fairly common migratory Thrush in eastern China, and it winters in Fohkien and Kwangtung.

74. *Merula naumanni* (Temm.).

Turdus naumanni D. & O. p. 153.

Merula naumanni La T. p. 571.

The Red-tailed Ouzel is an abundant migrant in the district from the end of March to the middle of April. It reappears rather late in October and may be met with throughout November. It winters in sheltered places in the mountains.

This Thrush was common in the mountains of the Liautung Peninsula in February 1890.

75. *Merula fuscata* (Pallas).

Turdus fuscatus D. & O. p. 155.

Merula fuscata La T. p. 572.

The Dusky Ouzel is common in this district during April and May and passes again during October. In 1913 one was seen on the 8th of March, and in 1915 one appeared at the port on the 14th of February and remained until the 19th.

I saw this Thrush at Newchwang in May 1889.

76. *Merula ruficollis* (Pallas).

Turdus ruficollis D. & O. p. 156.

I observed the Red-necked Ouzel for the first time on the 8th of March, 1917, when I shot one of three specimens. I subsequently saw thrushes on the 15th and 24th of that

month, which I took to be of this species. I have a specimen from Chien An.

Soft parts of the example obtained: Iris dark brown; mouth, gape, and base of lower mandible yellow, rest of bill blackish brown; legs livid greyish green, back of tarsi yellowish. Wing 5.1 in.; total length 9.9 in.

77. *Oreocincla varia* (Pallas).

Oreocincla varia D. & O. p. 158.

White's Thrush passes north-east Chihli in September and October, but appears to be scarce. I have yearly records as follows:—15/9/12, 14/9/13, 23/9/14, Chinwangtao and close vicinity, 24/8/14 (remains of a bird found at Chinwangtao), Oct. 1914, Shanhaikuan, 18/9/15, Chinwangtao; six birds in all. The bird seen at Chinwangtao on 23 September, 1914, made when flying a peculiar loud flapping sound resembling that made by pigeons and doves when taking flight.

78. *Geocichla sibirica* (Pallas).

Turdus sibiricus D. & O. p. 149.

Geocichla sibirica La T. p. 572.

The Siberian Ground-Thrush passes in spring. I shot a male in its second year at Chinwangtao on the 23rd of May, 1912, and two were shot or seen a few miles inland on the 23rd and 25th of May, 1913. I have a nearly adult male shot at Shanhaikuan in late spring.

I shot a pair of this Thrush on the plain near Newchwang on the 26th of May, 1889.

79. *Petrophila solitaria manilla* (Bodd.).

Monticola solitaria D. & O. p. 161.

Petrophila manilla La T. p. 572.

The Red-bellied Rock-Thrush first arrives at Chinwangtao during the first week in May, and migrants may be seen until about the middle of the month. It breeds on high rocks in the mountains. I have not noticed the autumn movements.

Four adult males in normal breeding dress and an adult

male with blue flanks and the centre of the under parts mixed blue and red, vary in length of wing from 4.60 to 4.69 in., culmen 0.72 to 0.88 in. The second primary in all but one is just under the 5th (in the exception, it is exactly between the 5th and 6th). A female measures: wing 4.47 in., culmen 0.70 in. This series confirms my supposition (Ibis, 1913, p. 270) that the small race of this Rock-Thrush breeds in northern China, none of the eight or nine birds collected approaching in size the large birds taken at Shaweishan, which were most probably bound for Japan.

Two nestlings were brought to me on the 25th of June and another somewhat younger on the 2nd of July, 1917. These birds, which were already very tame when they arrived, became extremely familiar and charming pets. I fed them chiefly on green-bean paste mixed with hard-boiled egg yolk and gave them also bread and milk and chopped raw beef, and grasshoppers when these were in season. They fed eagerly and were very voracious. When they could feed by themselves, they continued to take food from my hand, and often indulged in a tug-of-war among themselves, two of them getting hold of a piece of meat or a grasshopper and pulling until one of them remained in sole possession of the morsel. After a time, I placed them in a large cage with some of my other birds. They were inclined to bully these, and one day I found one pulling about my *Rhopophilus pekinensis*, which it would probably have killed if I had not interfered. I think one of these little thrushes was responsible for the death of a sickly bird which was in the same cage. One day, one of them, while at liberty in the room, caught hold of a small mouse I had in a box and killed it. When I took these birds down to Shanghai in the following October none of them showed any sign of putting on the adult plumage. A wild-caught adult never became tame, but soon learnt to eat dried "waterboatmen" and raw beef. Although I had this bird at liberty in my room it never attempted to sing, and I released it after a month or two.

An incomplete clutch of two fresh eggs was brought to me on the 29th of May, 1917, a full clutch of five eggs,

slightly incubated, on the 5th of June, one hatching egg on the 15th of June, two fresh eggs on the 25th of June, and one clutch of four incubated and very stale eggs on the 15th of July following. These eggs are of very pale blue, a few having fine specks of pale red. The texture of the shell is smooth and glossy. The shape varies from nearly oval to ovate. Thirteen eggs average 0.99×0.75 in. The largest is 1.01×0.77 in. and the smallest 0.96×0.74 in.

The nest pads brought with the eggs were composed of fine rootlets over a foundation of moss.

Monticola saxatilis, stated by Père David to occur in summer in the mountains of Chihli, has not so far been procured by me near Chinwangtao.

80. *Petrophila gularis* (Swinhoe).

Monticola gularis D. & O. p. 161, pl. 42.

Petrophila gularis La T. p. 572.

The White-throated Rock-Thrush passes towards the end of May. I saw a few at the port itself on the 23rd of May, 1914. It probably summers in this part of Chihli as well as further west.

This bird also passes Newchwang in May.

81. *Tharrhaleus montanellus* (Pallas).

Accentor montanellus D. & O. p. 180, pl. 33.

The Chinese Hedge-Sparrow is a common winter visitant to north-east Chihli. It is found on migration at Chinwangtao in very early spring and in November. During the winter 1914-15, this bird was often seen at the port, and from the 7th to the 23rd of March one or two haunted brushwood and other cover by the roadside. On the 23rd of March I saw as many as five of these birds in a garden. This Hedge-Sparrow appears to have much the same habits as the British bird. It is a familiar little bird, fond of underwood and dead brushwood, through which it flits or creeps. I have never heard it utter a sound.

The Chinese Hedge-Sparrow was common in February 1890 in the mountains of the Liantung Peninsula. It was common that spring at Newchwang on migration.

82. *Accentor collaris erythropygus* Swinhoe.

Accentor erythropygus D. & O. p. 178.

The Chinese Alpine Accentor is apparently a common bird in the mountains. I have a number of examples shot in winter near Shanhaikuan and one shot by Mr. A. Hall in outer Chihli. The range of this bird extends to Manchuria and eastern Siberia.

83. *Coccothraustes coccothraustes japonicus* T. & S.

Coccothraustes vulgaris D. & O. p. 348.

Coccothraustes japonicus La T. p. 572.

The Japanese Hawfinch is a common resident in north-east Chihli.

84. *Eophona melanura migratoria* Hartert.

Eophona melanura D. & O. p. 347 (part), pl. 92.

The Lesser or Migratory Black-tailed Hawfinch is apparently common in the Chien An district whence I have several specimens. I have also a male from Shanhaikuan shot on 19 May, 1914.

85. *Eophona personata magnirostris* Hartert.

Eophona personata D. & O. p. 346 (part), pl. 91.

The Large-billed Masked Hawfinch is a somewhat uncommon migrant in north-east Chihli. A handsome adult male was captured on the 17th of May while clinging to one of our house chimneys and was brought down in a dying condition. It was quite uninjured and in good condition and fat, and its stomach was crammed with broken seeds and small beans. Its plumage was fresh, and there was no sign of its having escaped from captivity. I have also a specimen from outer Chihli and one from Shanhaikuan shot on 12 November, 1914.

A tame bird seen on 12 June, 1915, in the possession of a native, would fly up and catch one after another two beads thrown up by its owner and bring them both back to him. The performance was repeated several times before me. On its return to the man's arm the bird was given a few seeds in exchange for the beads. The agility of this bird was

considerable. It had been two months in captivity according to the owner's statement.

I saw these birds at Newchwang in 1889, where the natives teach them to perform the same tricks of fetching and carrying.

86. *Loxia curvirostra albiventris* Swinhoe.

Loxia albiventris D. & O. p. 360.

The Eastern Crossbill is apparently of irregular appearance in north-east Chihli. Three netted specimens were procured at Shanhaikuan on the 29th of October, 1911. It was reported to me as common in the autumn of 1915, and a series of twenty birds, taken near Shanhaikuan in November 1917 and a pair, dated 25 December, 1917, were sent to me.

I shot this bird in the Liautung Peninsula in February 1890.

87. *Propasser roseus* Pallas.

Propasser roseus D. & O. p. 352 ; La T. p. 572.

Pallas's Rose-Finch is occasionally seen at the port on migration. I saw a few on the 4th March, 1911, on the 15th and 19th October, 1911, and on the 15th and 30th October and 20th November, 1913, and 9th October, 1915. I have a specimen from Chien An. It is a winter visitant to north-east Chihli, but I have not seen any at that season near Chinwangtao. I found this Rose-Finch to be quite common in February 1890 in the mountains of the Liautung Peninsula.

88. *Carpodacus erythrinus* (Pallas).

Carpodacus erythrinus D. & O. p. 350 ; La T. p. 572.

The Common Rose-Finch passes north-east Chihli at the end of April and during May. It is abundant during the latter half of May.

89. *Acanthis linaria* (L.).

Acanthis linaria D. & O. p. 336.

The Mealy Redpoll is a common migrant in the district in October and November. It winters in north-east Chihli, and I have seen it at the port at that season.

90. *Chloris sinica* (L.).

Chlorospiza sinica D. & O. p. 338.

The Chinese Greenfinch or Golden-wing is a common resident in north-east Chihli. Birds from Chien An and Chingwangtao do not appear to differ from specimens from the Lower Yangtse. I procured three nests in 1915. One taken on the 29th of April was brought to me with one egg (the others were probably broken), and two taken on the 9th of May following each contained four eggs. These eggs are of the pale bluish-green variety with specks of black and dark brown, with a few fine hair-lines on two of the eggs. The single egg and those of one of the clutches taken on the 9th of May have few or no underlying markings, but two of the eggs of the third clutch have numerous very pale underlying shell-blotches and spots of reddish grey on the large end. Six of the eggs are ovate in shape and three are a blunt oval-ovate. The single egg measures 0.65×0.47 in.; the others vary in length from 0.67 to 0.75 in. and in breadth from 0.50 to 0.54 in. The nests are the usual compact little cups with thick sides, and are made of pine needles, fine rootlets, and the top twigs of a woolly-leaved plant, with a liberal admixture of wool, feathers (quail and others), goat or other hair, and spiders' egg-cases. One is lined with a little horsehair, the others with feathers, wool, and fine rootlets intermixed. The inner diameter is 2.00 in., the inner depth from $1\frac{1}{4}$ to $1\frac{3}{4}$ in., the outer diameter $3\frac{1}{2}$ to $4\frac{1}{2}$ in., and the outer depth from 2 to $2\frac{1}{2}$ in. These nests were placed on pine trees. Two nests, each containing four fresh eggs resembling the above, were brought to me from the mountains, north of the port, on the 15th of June and 2nd of July, 1917.

91. *Chrysomitris spinus* (L.).

Chrysomitris spinus D. & O. p. 337.

The Siskin passes through the district in spring but must be uncommon, as I have only one example, taken near Shanhaikuan on the 30th of April, 1914, and I have no local records. I have no note of its occurrence in autumn.

92. *Fringilla montifringilla* (L.).

Fringilla montifringilla D. & O. p. 333; La T. p. 572.

The Brambling is an abundant spring migrant. It appears at the port from the end of March to about the 24th of April. The males are at that season generally in full or nearly full summer dress with the buff edges of the feathers worn off. It occurs in autumn during October and November, and winters in the hills.

The Brambling passes Newchwang in April. I also obtained a single female in February 1890 in the mountains of the Liautung Peninsula.

93. *Passer montanus* (L.).

Passer montanus D. & O. p. 340.

The Tree-Sparrow is abundant, as elsewhere in China, in the cultivated districts of north-east Chihli. At the port it occurs all the year round even in the depth of winter. In autumn large flocks are to be seen in the crops, on which they no doubt levy heavy toll; but the immense quantities of insects consumed by the birds in summer without doubt largely make up for damage to the grain crops. Probably a certain movement goes on at migration seasons, as is proved by the observations made at Shaweishan.

94. *Calcarius lapponicus coloratus* Ridgw.

Plectrophanes lapponicus D. & O. p. 320.

Calcarius lapponicus La T. p. 572.

The Lapland Bunting occurs on the plain in late winter and early spring in immense flocks. It reappears in numbers in late autumn and without doubt winters here.

This Bunting was common in the mountains of the Liautung Peninsula in February 1890.

95. *Plectrophenax nivalis* (L.).

Plectrophanes nivalis D. & O. p. 320.

Plectrophenax nivalis La T. p. 572.

The Snow-Bunting is a rare bird in northern China according to Père David. I have only one specimen, which I shot on the seashore at Chinwangtao on the 17th of February, 1913. From its appearance this bird had been for some time at the port.

96. *Emberiza pallasii* (Cab.).

Schœnicola pallasii D. & O. p. 321.

Emberiza passerina La T. p. 572.

Pallas's Reed-Bunting is a very abundant migrant in north-east Chihli and apparently winters at Chinwangtao. It occurs on migration in the vicinity from the beginning of March to the beginning of May, and I have seen large numbers in October at the marshes near by. The birds at that season are in very handsome orange-buff plumage. I have a male in full breeding dress shot at Shanhaikuan on 8 May, 1915.

This Reed-Bunting was common in southern Manchuria in February and March, 1890, and probably also winters there.

97. *Emberiza yessoensis continentalis* Witherby.

Emberiza continentalis La T. p. 573.

The Chinese Reed-Bunting is a common migrant at Chinwangtao in spring, the 9th of March and the 19th of May being the earliest and latest records there. A few are met with in autumn from the beginning of October. My latest record at that season is the 17th of November.

A female example obtained at Shanhaikuan in late spring has the head coloured as follows: Crown brownish black, sides of the head pure black; an ill-defined white eyebrow; chin, upper throat, and malar stripe black, the chin and upper throat with white fringes to the feathers; sides of neck white, the white prolonged brokenly towards the base of the lower mandible; the under parts are very white. Wing 2.35 in.

98. *Emberiza schœniclus pyrrhulina* Swinhoe.

Emberiza pyrrhulina La T. p. 573.

The Finch-billed Reed-Bunting is not uncommon at Chinwangtao and in the vicinity at the end of March and during April. I have no note of its occurrence in autumn.

I found this Reed-Bunting at Newchang in the reed-beds of the River Liao in the early spring of 1890.

99. *Emberiza fucata* Pallas.

Emberiza fucata D. & O. p. 325; La T. p. 573.

The Grey-headed Bunting is a common migrant in the vicinity of Chinwangtao during spring. I have obtained it at that season from the 24th of April to the 5th of June. It occurs commonly in autumn during the first half of October.

100. *Emberiza pusilla* Pallas.

Emberiza pusilla D. & O. p. 323; La T. p. 573.

The Little Bunting is extremely abundant during the spring passage. A few appear towards the first half of April, and during May they swarm all over the country until about the 20th of that month. In autumn it occurs in October and November.

101. *Emberiza spodocephala* Pallas.

Emberiza spodocephala D. & O. p. 329; La T. p. 573.

The Grey-headed Black-faced Bunting is a very common migrant. It passes from early in April until the beginning of June and it occurs commonly in September and October.

102. *Emberiza rustica* Pallas.

Emberiza rustica D. & O. p. 324; La T. p. 573.

The Rustic Bunting is an abundant migrant, both in spring from the end of February to late in March and in autumn. It winters in numbers in the district.

103. *Emberiza elegans* Temminck.

Emberiza elegans D. & O. p. 322; La T. p. 573.

The Yellow-throated Bunting is found from about the middle of March to the middle of April. It also occurs in autumn; and probably in winter in sheltered localities.

I found this Bunting in the mountains of the Liautung Peninsula in February 1890.

104. *Emberiza chrysophrys* Pallas.

Emberiza chrysophrys D. & O. p. 325; La T. p. 573.

The Yellow-browed Bunting passes commonly at the beginning of May and may be found in the vicinity till about the 20th of May. I have no note of its occurrence in autumn, but it has probably been overlooked.

105. *Emberiza tristrami* Swinhoe.*Emberiza tristrami* D. & O. p. 326; La T. p. 574.

Tristram's Bunting passes from the end of April to the end of May or the beginning of June. I have a female found dead at Chinwangtao on the 23rd of October, 1915, by one of my children.

106. *Emberiza cioides* Brandt.*Emberiza cioides* D. & O. p. 328.

The Eastern Meadow-Bunting is a very common resident species in this district. It is as elsewhere in China and Manchuria a hill bird, but comes down to the plains in winter. During January and February, 1915, a flock appeared here and remained throughout those two months, feeding on the seeds of grasses on the bluff. This was, no doubt, on account of the severe weather which prevailed at the time. One of these which I shot was a large bird, measuring 3.30 in. in the wing. I have no Siberian examples, but I am unable to distinguish between birds from Fohkien, the Lower Yangtse, and north-east Chihli. Birds from Chihfeng in northern (outer) Chihli, on the borders of the Gobi Desert are precisely similar to those from Shanhaikuan, and these do not differ appreciably from examples collected in south-east China. The chin-spot is a variable feature.

The wing-measurements of 35 examples of this species in my collection are as follows:—

		in.		in.		in.		in.
Fohkien	..	♂	9, 2.92-3.01, aver.	2.98.	♀	5, 2.71-2.85, aver.	2.76	
Chinkiang	..	♂	2, 2.96-3.11	„ 3.04.	♀	4, 2.80-2.90	„ 2.86	
N.E. Chihli	.	♂	13, 3.01-3.30	„ 3.04.	♀	2, 2.88-2.93	„ 2.91	
			<hr/>			<hr/>		
			24			11		
			<hr/>			<hr/>		

Some thirty nests with eggs of this Bunting were brought to me from the mountains north of Chinwangtao, on the 23rd of May (two incomplete clutches), on the 26th of May (complete and nearly all fresh), and on the 3rd & 15th of June, and 2nd of July. The eggs brought on the last-mentioned date were nearly fresh, but those taken in June were nearly

all more or less incubated. Most of these clutches are exceedingly handsome, the ground-colour varying from a dead white to a warm orange-pink. The tracery of lines and spots is even more varied than in eggs taken further south and occasionally encircles the whole egg. None of the eggs bears any trace of the yellow blotches found on Chinkiang or Fohkien eggs.

This Bunting was very abundant in February 1890 in the mountains of the Liautung Peninsula, and is doubtless a resident species also in that locality.

107. *Emberiza godlewskii* Taczanowski.

Emberiza cia and *E. godlewskii* D. & O. pp. 327 & 546.

Godlewski's Meadow-Bunting is a resident species in the mountains of north-east Chihli. A male shot by me on the 2nd of May, 1915, was foraging among dry vegetation on a stony reach of the Shih Ho.

I procured three clutches of Meadow-Buntings' eggs which I believe to belong to this species. All came from the mountains north of Chinwangtao. One was brought to me on the 23rd of May, the second on the 29th of May, and the third, accompanied by a male bird, which the collector said was owner of the nest, on the 3rd of June, 1917. All these eggs were fresh, each clutch being composed of four eggs. The eggs differ from those of *E. cioides* in having a pale green ground-colour and fewer markings. The first clutch is of a very elongated ovate, a very unusual shape for these Buntings' eggs, the others are a broad ovate, one of the eggs being a dwarf. They measure as follows: largest egg 0.87×0.57 in., smallest 0.66×0.53 in., broadest 0.79×0.61 in., average 0.80×0.59 in.

108. *Emberiza leucocephala* Gm.

Emberiza leucocephala D. & O. p. 329.

The Pine Bunting is extremely common in winter in the vicinity of Chinwangtao, and is found on the plains near the hills as well as in the mountains. Two males shot near Shanhaikuan in February have the throat pure chestnut without pale fringes and the crown very pure white.

109. *Emberiza aureola* Pallas.*Euspiza aureola* D. & O. p. 332.*Emberiza aureola* La T. p. 574.

The Yellow-breasted Bunting is very abundant during both passages. It occurs in spring from the end of April to the end of May or beginning of June. Two were seen at the port on the 13th of June. This bird reappears very early on the return passage, and I have seen one (an adult male) on the 30th of July. It is extremely abundant from the beginning of August and in September, when it swarms in the crops. A few occur at the beginning of October, as I saw two at the port on the 7th and 9th of that month in 1915.

This Bunting was abundant at Newchwang in May 1889. It has a very sweet song and stands captivity well.

110. *Emberiza rutila* Pallas.*Euspiza rutila* D. & O. p. 331.*Emberiza rutila* La T. p. 574.

The Ruddy Bunting passes in May, but I have hardly any notes of its occurrence. Two live birds in first plumage, obtained on the 24th of September, moulted during October into the immature male plumage. This Bunting is also a fine songster.

This bird occurs at Newchwang on migration. It would appear to nest at Chihfeng in northern Chihli, as Mr. A. L. Hall procured there a nest containing five eggs, which he assured me belonged to a live cock-bird he very kindly brought me from that locality. Four of the eggs were unfortunately broken. The remaining one is whitish, scrolled round the large end with brown hair-lines and underlying violet lines, the latter prolonged on the middle part of the egg. There is a brown spot near the apex. The shape is a rather blunt ovate. It measures 0.80 by about 0.60 in.

111. *Chelidon urbica whitelyi* Swinhoe.*Chelidon lagopoda* D. & O. p. 130; La T. p. 574.

I shot the only specimen of Pallas's House-Martin seen by me at Cuiwangtao on the 18th of May, 1913, as it was

flying along the seashore in company with House-Swallows. Père David found this Martin breeding in the mountains to the west of Peking. I have another example shot at Shaweishan on the 10th of May, 1908. The Rev. Geo. D. Wilder, of Peking, has informed me that he saw a few pairs breeding on rocks in the mountains to the north-west of Chinwangtao.

112. *Cotile riparia* (L.).

Cotyle riparia D. & O. p. 128.

Cotile riparia La T. p. 574.

The Sand-Martin passes in great numbers from about the 10th of August to early mid-October. The birds travel in company with House-Swallows, Swifts and other birds, the bulk of the migrants passing during the latter half of August and in early September. The spring migration is not often apparent and in most years not many birds are seen. On the 17th and 19th of May, 1913, great numbers passed the port. Without doubt, this bird breeds in the vicinity.

113. *Ptyonoprogne rupestris* (Scop.).

Ptyonoprogne rupestris D. & O. p. 129.

The Crag Martin breeds regularly in the Shanhaikuan mountains. In 1915, my collector informed me that the birds first appeared on the 6th of April. I saw one that year, on the 2nd of May, circling high over a rock where the birds are said to breed every year.

114. *Hirundo rustica gutturalis* Scop.

Hirundo gutturalis D. & O. p. 124; La T. p. 574.

The earliest record I have of the appearance of the Eastern House-Swallow at Chinwangtao is the 10th of April (1913). The spring passage lasts from about that date until the last days in May. This Swallow passes again from about the first week in August, and birds are to be seen migrating until about the middle of October. I saw a belated bird on the 17th of November, 1912. The local summer birds arrive later than the migrants. They begin to build about the end of April. They leave towards the end of August, but in

1914 there were nests with unfledged young at the railway station on the 30th of August. These were no doubt a second brood. The majority of the local birds were congregating on the telegraph-wires and preparing to leave on the 27th of August that year. In the spring of 1915 the scarcity of Swallows here was remarkable. I hardly noticed any migration and the local birds appeared very late. None bred at the Custom House, where in previous years there had been numerous nests. At the railway-station, four miles inland, on the 18th of May one nest was about three-quarters built and the others were only just begun. In 1911 they were already building on the 23rd of April.

115. *Hirundo rustica erythrogastra* Bodd.

Hirundo gutturalis D. & O. p. 124 (part).

Hirundo erythrogastra La T. p. 574.

The American Swallow was not at all uncommon in the spring of 1913, and was observed from the middle of April to the 20th of May. I saw one at the port on the 13th of July which was evidently breeding. This Swallow probably passes regularly, and the want of records is due to no special observations having been made.

While at Peking in 1883, I remember seeing large flocks of red-bellied Swallows which were probably this bird or *H. tytleri*. There is a specimen of this latter Swallow collected at Peking in the Shanghai Museum, and Mr. Styan some years ago recorded in the Proceedings of the Zoological Society of London the capture of rufous-bellied Swallows which he identified as *H. savignii*.

116. *Hirundo daurica nipalensis* Hodgson.

Cecropis daurica D. & O. p. 125.

Hirundo nipalensis La T. p. 574.

Hodgson's Striated Swallow passes in great numbers with the House-Swallow. In 1913 it was observed migrating from the 14th of April until the 20th of May, and these are probably the average dates for the spring passage. The return passage begins in the first week in August and lasts until about the first week in October, but the majority of

the birds have passed by the 21st of September. The local birds begin to build about the beginning of May. There is occasionally a second brood. The birds take their departure with the common House-Swallows.

117. *Ampelis garrulus* (L.).

Ampelis garrulus D. & O. p. 130.

The Bohemian Waxwing is of irregular occurrence. I saw a newly-caught bird in the possession of a native at Shan-haikuan on the 23rd of April, 1911. On the 21st of November, 1915, there were a few for sale in the market, and again on the 21st of February, 1916; all were females. On the 12th of March, 1916, a single bird appeared at the port and remained there until the 21st of the month, when it was shot by my over-zealous collector. I had a live example, procured that spring, which I kept until my departure from Chin-wangtao, when I gave it to a friend at Shanghai together with most of my other live birds.

118. *Motacilla leucopsis* Gould.

Motacilla alboides D. & O. p. 298.

Motacilla leucopsis La T. p. 575.

The White-faced Wagtail is not often seen near Chin-wangtao, but it is common inland among the mountains, where it nests. A nest and three eggs were brought to me from the mountains north of the port on the 11th of May, 1917.

119. *Motacilla ocularis* Swinhoe.

Motacilla ocularis D. & O. p. 299; La T. p. 575.

The Streak-eyed Wagtail is common on passage from about the 25th of April to the middle of May. The birds are then in full or nearly complete summer plumage. In autumn it passes with the last of the Yellow Wagtails from about the middle of September to the middle of October. I have examples from Chien An dated 7 April.

120. *Motacilla boarula melanope* Pallas.

Calobates melanope D. & O. p. 302.

Motacilla melanope La T. p. 575.

I have never seen the Eastern Grey Wagtail at the port.

I saw one or two at the foot of the mountains, twelve miles north of the port, on the 21st of May, 1911, and one was shot at Shanhaikuan by my collector on the 26th of April, 1914. I have a number of specimens from Chien An, so that it is evidently common inland.

121. *Motacilla flava simillima* Hartert.

Budytes flavus D. & O. p. 302.

122. *Motacilla flava borealis* L.

Budytes cinereicapillus D. & O. p. 303.

The Eastern Grey-headed Wagtail (*M. borealis*) and the Blue-headed Wagtail (*M. simillima*) migrate together and both forms are found in the same flocks. *M. simillima* is by far the least common and, judging from the series shot and the birds observed at sufficiently close quarters in the field, less than 20 per cent. and probably not much more than 10 per cent. of the birds composing the large flocks which pass in spring and autumn are *M. simillima*. The birds in spring are all in summer dress. On the return passage a very few still wear the bright summer plumage. These birds pass in spring from about the middle of April to about the 20th of May, and in autumn immense flocks pass from the latter half of August until the last decade of September. I have many examples of *M. borealis* from Chien An, dated from 16 April to 13 May, and two of *M. simillima* from the same locality dated 22 and 26 April.

123. *Dendronanthus indicus* (Gm.).

Limonidromus indicus D. & O. p. 305 ; La T. p. 575.

The Forest Wagtail passes through the district in May. A few were seen near the port or at Chinwangtao itself on 21 May, 1911, 12 and 20 May, 1913, and 20 May, 1916. It breeds in the mountains north of Chinwangtao, whence I have two nests, each with four eggs, brought to me on 2 July, 1917, together with the female parent bird of one of the nests. The nests, according to the native collectors, were placed on horizontal branches of pear trees. They are small neat cups, made of very fine grass stems,

strips of soft grass, a few dried leaves, moss, a feather or two, and in one case, wool, all thickly bound with cobwebs, the rim of the nests finely smoothed off with cobwebs. The lining is of black and white horse- and cow-hair and very fine rootlets. One nest measured $1\frac{3}{8}$ in. in depth and $2\frac{1}{4}$ in. in diameter (inner measurements) and $1\frac{3}{4}$ in. in depth and $2\frac{1}{2}$ in. in diameter (outer measurements). The other nest is $1\frac{1}{2} \times 2\frac{1}{4}$ in. inside, and $2 \times 3\frac{1}{8}$ in. outside. The eggs are pale greyish olive-green, sparsely marked with bold spots and blotches of rich, dark (almost Vandyke) brown, over both deep and faint specks, spots and short lines of violet-grey. The surface spots often run into the ground-colour and are round in shape or else terminate in a short thick line. One egg in each clutch is much washed with reddish. An egg sent to me from Peking by the Rev. Geo. D. Wilder is quite similar to these eggs. The eggs are ovate in shape. The largest of seven of these measures 0.85×0.61 in. and the smallest 0.77×0.58 in. They average 0.80×0.60 in.

124. *Anthus trivialis maculatus* (Hodgson).

Pipastes agilis D. & O. p. 308.

Anthus maculatus La T. p. 575.

The Eastern Tree-Pipit passes abundantly from the last days of April to the middle of May. It passes again from the first week in September to the first week in October. I saw a belated individual in a garden at the port on the 14th of November, 1914.

125. *Anthus spinoletta japonicus* T. & S.

Anthus spinoletta D. & O. p. 306 (part).

Anthus japonicus La T. p. 575.

The Japanese Water-Pipit appears at Chinwangtao towards the middle of April and is found until about the 10th of May. It migrates in autumn in company with the Wagtails and Swallows, many flocks of which fly by in late August and September. I have seen it in the marshes in October until the 25th of that month. The first arrivals in spring are still in winter dress but soon assume the summer plumage, dark

ashy-grey, upper parts obscurely spotted, and buffish vinous under parts with a few drop-like spots on the breast and flanks. I have an example from Chien An dated 11 May.

126. *Anthus spinoletta blakistoni* Swinhoe.

Anthus spinoletta D. & O. p. 306 (part).

Blakiston's Water-Pipit is found in the vicinity of Chin-wangtao in October and November. It probably winters near unfrozen streams.

127. *Anthus cervinus* (Pallas).

Anthus cervinus D. & O. p. 306 ; La T. p. 575.

The Red-throated Pipit is of irregular occurrence in spring. I have noted it only during 1911 and 1912 on the 14th and 15th of May. It passes in September. During that month enormous flocks of Pipits pass by, and there is little doubt that the flocks are composed of all the species of East Asian Pipits.

128. *Anthus gustavi* Swinhoe.

Corydalla gustavi D. & O. p. 309.

Anthus gustavi La T. p. 575.

The Petchora Pipit passes in May. Examples were obtained or seen by the collectors on the 20th and 25th of that month in 1913. This Pipit differs from all the Chinese Pipits in having the outer rectrices nearly always of a dull orange buff. Out of a large series examined, I have seen only one with white outer rectrices.

129. *Anthus richardi* Vieill.

Corydalla richardi D. & O. p. 309.

Anthus richardi La T. p. 575.

Richard's Pipit passes commonly from about the 5th to the middle of May. It appears again early in August, and is exceedingly abundant throughout September on the plain. Large flocks of this bird may also be seen passing during that month. Young birds in first plumage are common in August and moult into the adult autumn dress at the end of that month. The young bird in first plumage is very dark brown, almost black, on the crown and upper parts, the feathers being squamate and broadly edged on the nape,

hind neck, lesser wing-coverts and narrowly on the back with pale buff. The spots on the breast are dark and numerous.

I found on the beach at Chinwangtao at the end of August 1916 a skeleton of this bird with just the rectrices and wing-quills adhering.

The Rev. Geo. D. Wilder has procured at Peking and in Mongolia examples of *A. striolatus* Blyth. It is possible that this bird, hitherto unknown in China, may straggle to the coast.

130. *Otocorys alpestris flava* (Gm.).

Otocorys alpestris D. & O. p. 315.

A series of six examples of the Horned Lark shot near Shanhaikuan was brought to me on the 2nd of December, 1913: two adult males, wing 4.65 and 4.75 in.; three young males, wing 4.08, 4.15, and 4.20 in.; and an adult female, wing 4.25 in. Another was brought to me on the 9th of December following, and one was shot in the same locality on the 24th of November, 1914.

131. *Otocorys alpestris brandti* Dresser.

Otocorys sibirica D. & O. p. 315.

Two very handsome male examples of the Siberian Horned Lark were collected near Shanhaikuan at the beginning of November 1912. I have another from Chihfeng in northern Chihli, where the bird apparently winters. The latter example is darker and browner grey above than in the Shanhaikuan specimens; it is also somewhat larger. The wings in the three examples measure 4.20, 4.25, and 4.30 in. respectively.

132. *Melanocorypha mongolica* (Pallas).

Melanocorypha mongolica D. & O. p. 319, pl.

The Mongolian Calandra Lark is not usually of common occurrence in this vicinity. On the 14th and 15th of November, 1914, however, myriads of these birds flew over, from an easterly or east-north-easterly direction going west. Flocks upon flocks composed of hundreds of these handsome birds

went by during these two days. On the 16th I saw a large flock a few miles inland also going west, and I was told that the birds had been passing for four days. Many were netted by the natives and live birds were selling in the market for a few cents. Flying with the Mongolian Larks were large flocks of *Alaudula cheleensis*. All these birds passed by or settled in the fields for a short time and then flew on.

133. *Alauda arvensis pekinensis* Swinhoe.

Alauda pekinensis Swinhoe, P. Z. S. 1863, p. 83.

Alauda arvensis D. & O. p. 312.

Great numbers of Larks fly past during October and November, often in company with the flocks of rooks and jackdaws. Many remain on the plain during the winter and migration begins again early in March, migrants being seen until about the middle of April.

The Larks obtained in this locality during winter have the ground-colour of the feathers of the upper parts of a rather light sandy buff, the breast is pale-coloured, with narrow, well-defined spots. Five males obtained, one on the 7th of November and four in February, measure in the wing from 4.28 to 4.48 in., three females obtained in January and on 8th and 22nd of March are similar (wing 4.00 to 4.20). A female shot at Shaweishan on the 4th of November (wing 4.20) resembles these north-east Chihli winter birds. Four males shot here in September and October on migration have similar upper parts, but the breast is tawny with rather large and less well-defined spots, wing 4.40 to 4.60 in. The same bird occurs at Chinkiang in winter (wing, ♂ 4.37 in., ♀ 4.10 in.), and some winter birds from Foochow are very similar as to colouring, but are smaller (wing, ♂ 4.01 to 4.22 in., ♀ 3.90 in.).

134. *Alauda arvensis cinerascens* Ehmecke.

Alauda arvensis D. & O. p. 312 (part); La T. p. 576.

A small, dark-coloured Lark, probably Ehmecke's Skylark, passes here in spring. I have autumn examples from Shaweishan, a winter bird from Chinkiang, and two winter birds from Foochow. These birds are very heavily marked

above, the feathers of the crown, upper parts, wings, and tail are blackish brown, narrowly edged on the crown and upper parts with rather dark greyish sandy. The breast is heavily marked with large spots. Wing, ♂ 4·10 to 4·30 in., ♀ 3·85 to 4·00 in.

135. *Alaudula minor cheleensis* (Swinhoe).

Calandrella cheleensis D. & O. p. 317.

Alaudula cheleensis La T. p. 575.

The North China Sand-Lark breeds abundantly on the plain and on the stony reaches of the Shih Ho. I do not know that any winter, but flocks travel past with the Skylarks in autumn. As mentioned above, great numbers passed with the Mongolian Larks in November 1914. I found a frozen migrant on the breakwater here on the 12th of February, 1911, and that month numbers which had evidently just arrived were seen on the plain. Breeding takes place during April and May. ° Two nests were found by my children on the 16th of May at the marshes. Each contained three eggs, the full clutch. The nests were built in small depressions in the ground on the plain. Two others found at the port were on the sand-hills on the 6th of May, and contained respectively one and two eggs. Another nest seen by me on the 2nd of May was sunk deep in the sandy soil in the dry stony bed of the Shih Ho and contained two eggs. The nests are made of scraps of grasses and fine rootlets. They are very fragile and generally come to pieces on being removed. The eggs are three in number. The ground-colour is a yellowish or greenish white. The markings are pale yellowish or clayish brown with lilac-grey shell-specks, the latter forming a more or less broad zone round the larger end. A clutch taken on 24 April, 1915, measures 0·77 × 0·56 in. (two eggs) and 0·78 × 0·56 in. Another, kindly measured for me at the British Museum by Mr. C. B. Rickett, measures (in millimetres) 20 × 16 and 21 × 16 (two eggs).

136. *Calandrella brachydactyla* (Leisl.).

Calandrella brachydactyla D. & O. p. 318 ; La T. p. 575.

My collectors met on the 19th and 27th of April, 1913,

several flocks of these Larks and shot a number of specimens. I have one example from the neighbourhood of Shanhaikuan shot on the 25th of April of the following year. I have never noticed any myself. So far as I could make out, there were none of these birds among the flocks of larks seen on the 14th and 15th of November, 1914.

137. *Galerida cristata leautungensis* Swinhoe.

Galerida cristata D. & O. p. 317.

The North China Crested Lark is a common resident in the hill-country. I have seen two examples on the coast: one at the port on the 4th of October, 1912, in stormy weather, and the other in the vicinity of the marshes on the 12th of October, 1913. The weather on the latter day was fine and warm with a light westerly breeze. Both of these birds were doubtless chance stragglers from the foot-hills. Three clutches of eggs were brought to me by my collector from Shanhaikuan. The nests are rather large cups of dried grasses and bents, lined with finer grasses, of the usual lark type. The measurements of three nests are as follows:—

<i>June 1914.</i>				
a.	Inner diameter	$2\frac{3}{4} \times 3$.	Inner depth	1.40 inches.
	Outer "	$5\frac{3}{4}$	Outer "	$1\frac{3}{4}$ "
b.	Inner "	$2\frac{3}{4}$	Inner "	$1\frac{3}{4}$ "
	Outer "	5	Outer "	$2\frac{1}{4}$ "
<i>3 May, 1915.</i>				
c.	Inner diameter	$2\frac{3}{4}$	Inner depth	1.42 "
	Outer "	5	Outer "	$2\frac{1}{4}$ "

The eggs are moderately glossy and vary in shape from broad ovate to oval-ovate. The ground-colour is yellowish white or white. One of the clutches obtained in 1914 is rather heavily, but not thickly, spotted and speckled with brown and violet-grey, the latter on the surface as well as within the shell. The markings in the clutch dated 3 May, 1915, are similar to these, but the eggs have a light cap. Those of a clutch dated 10 May, 1915, without a nest, are also similar, but more closely and finely marked; one egg has a zone and the others a rough cap. The other clutch

taken in 1914 has three eggs much resembling those taken on the 3rd of May, 1915, while the fourth resembles somewhat those of the clutch taken on the 10th of May, 1915. There are four eggs in a clutch. Fifteen eggs vary in size from 0.91×0.67 and 0.90×0.69 in. to 0.82×0.67 in., they average 0.89×0.68 in.

Two nearly hard-sat clutches of four and five eggs were brought to me from the mountains on the 25th of June, 1917.

138. *Picus canus jessoensis* Stejn.

Gecinus canus D. & O. p. 51 (part).

The Pale Grey-headed Woodpecker is a very common resident in north-eastern Chihli.

The birds procured in the vicinity of Chinwangtao show considerable variation in the amount of black on the nape. Some examples have no trace of markings on the occiput and nape, whereas others have these parts as well marked as some Chinkiang (Lower Yangtse) specimens of *P. guerini*. Between these two extremes there is perfect gradation in my series from Chinwangtao. The bright green upper parts of the winter plumage become almost pure grey in summer, not by abrasion but through the fading of the green into grey. The under parts also become pale greyish. The wing-measurements of fourteen males and of six females of Grey-headed Woodpeckers in my collection are as follows:—

<i>P. c. jessoensis</i> , north-east Chihli	11 ♂ 5.65–5.93,	2 ♀ 5.80 in.
<i>P. c. zimmermanni</i> , Lower Yangtse. . . .	2 ♂ 5.71,	3 ♀ 5.70–5.77 in.
<i>P. c. jessoensis</i> , Yuensan, Corea	1 ♂ 5.77,	1 ♀ 5.77 in.

The wing-measurements of eleven males of *P. c. jessoensis* from north-east Chihli are as follows:—

Head and nape unmarked	5.70, 5.72, 5.78	inches.
„ „ „ slightly marked	5.70, 5.75, 5.87, 5.93	„
„ „ „ well marked	5.65, 5.75, 5.85, 5.90	„

Three young birds, fledged, but unable to fly, were brought to me on the 2nd of July, 1917. One died that day, but I kept the others for some time, feeding them on chopped raw meat and bread and milk and letting them pick up ants for

themselves. They were very tame and interesting little birds, but only one kept fairly healthy. I released this one on the 15th of July as he was impatient of captivity and flew well. Unfortunately, there was a heavy storm that night and he was killed by the rain.

The Pale Grey-headed Woodpecker is a common bird in the mountains of the Liautung Peninsula, where I obtained specimens in February, 1890.

The birds recorded by me from Chinkiang (Ibis, 1907, p. 2) as *Gecinus canus* and pale-coloured *G. guerini* are, I find after comparison with specimens in the Tring Museum, *P. c. zimmermanni* Reichenow, a form described from Shantung in 1903 (Orn. Monatsber. 1903, p. 86). This subspecies extends from Peking to the Lower Yangtse and is intermediate between *P. jessoensis* and *P. guerini*.

139. *Hypopicus hyperythrus subrufinus* Cab. & Heine.

Hypopicus poliopsis D. & O. p. 51 ; La T. p. 576.

The Brown-bellied Woodpecker is a common migrant in north-east Chihli. I have seen it both in spring and in autumn at the port itself. It passes in spring from about the 10th to the last week in May, and again from the end of August to about the middle of September or even later. Nearly all the birds obtained or seen by me during the autumn passage were young birds of the year, with the remains of the spotted nestling plumage on the head, neck, and breast. The birds captured in spring are all in adult dress with more or less light-coloured under parts. The females appear to elude observation more than the males. I have only three from north-eastern Chihli, all shot in spring. The adult male has the under parts of a deep golden buff or very light yellowish brown ; the iris is crimson, the upper mandible is green and the under mandible yellow. The adult female has the under parts and the under mandible similarly coloured. Five young males obtained here and dated 4-8 September have the under parts deep umber-brown, darkest and dullest in the youngest bird, the under parts becoming lighter in the older birds. The white spots and bars of the upper parts are

rather less developed in the young bird than in the adult. The head, neck, and breast are in all more or less spotted with dull whitish buff, the spots being subterminal, between the blackish centre of the feather and the blackish terminal fringe. The iris is of a greyish lake and the bill dark green, lighter green on the lower mandible. The wing-measurements are: Ad. ♂ 5·05–5·30, ad. ♀ 5·00–5·23, imm. ♂ 4·95–5·15 inches.

The bird in the Styan collection mentioned by Mr. C. Ingram ("Birds of Manchuria," Ibis, 1909, p. 452) is probably one of the two collected by me in 1889. I saw a pair on the plain near Newchwang that year on the 26th of May and shot the male. Another adult male was given to be by a friend that same month.

I have a female example from Shanghai, purchased there on the 31st of December, 1916.

140. *Dendrocopus major japonensis* Seeböhm?

A heavily spotted form of the Great Spotted Woodpecker is a fairly common resident in north-east Chihli. The wing-measurements in two males are 5·00 and 5·30 in., and in three females 5·10, 5·20, and 5·25 in. One of the males has the wing-spots very large, and the two outer pairs of rectrices are white with a couple of incomplete bars. The under parts of specimens obtained near Chinwangtao are of much the same shade of brownish white as average specimens of *D. cabanisi*.

141. *Dendrocopus major luciani* (Malh.).

Picus mandarinus D. & O. p. 47 (part).

The Chinese Great Spotted Woodpecker is a very common resident in north-east Chihli. In comparing my local series of this bird with series from Fohkien and the Lower Yangtse, I have come to the conclusion that there are three fairly distinct geographical forms of this Woodpecker in eastern China. These may be distinguished as follows:—

Fohkien birds, *D. cabanisi* (Malh.).—Wing-spots small and rounded in shape, not very conspicuous on the innermost secondaries; scapulars uniform black; side rectrices evenly barred white and black.

Wing, ♂ 5·20–5·40 in.; ♀ 5·08–5·30 in. Av. 5·23 in.

L. Yangtse birds.—Wing-spots generally large and broad; scapulars as a rule with some white spots; side rectrices with generally more white than black.

Wing, ♂ 5·15–5·21 in.; ♀ 4·95–5·12 in. Av. 5·06 in.

N.E. Chihli birds, *D. luciani* (Malh.).—Wing-spots large, forming on the inner secondaries complete or almost complete white bars; scapulars often spotted with white, the white in some birds being extensive; side rectrices with narrow and often incomplete black bars.

Wing, ♂ 5·00–5·22 in. Av. 5·14 in. ♀ 5·05–5·20 in. Av. 5·12 in.

Two male and one female examples from northern Anhwei, collected by the late Father Perrin, S.J., are somewhat intermediate between the Yangtse and northern birds. They have spotted scapulars and very broad alar spots, these forming bars across the innermost secondaries of the female example which, moreover, has the rump barred with white. The side rectrices are narrowly barred with black. For remarks on this very variable bird, see Swinhoe, P. Z. S. 1863, p. 88, and Seebohm, Ibis, 1883, pp. 23–4, and Ibis, 1891, p. 376. The remarks on the variability of this Woodpecker in 'Les Oiseaux de la Chine' are certainly not borne out by my large series. The differences are to a great extent geographical. As in the Green Woodpeckers, the birds from Fohkien differ least among themselves, and those from the Yangtse and northern China are the most variable. The birds taken at Chinwangtao often grade into *D. major japonensis*. A female from this locality has the wings irregularly marked with chestnut; another has traces of chestnut on the same parts.

142. *Iyngipicus scintilliceps* (Swinhoe).

Iyngipicus scintilliceps D. & O. p. 50.

The Spark-headed Woodpecker is found in the wooded districts north of Chinwangtao, but does not appear to be common.

The Fohkien and Formosan race of this Woodpecker is quite distinct. The Yangtse and Chihli birds have rather more white on the back and the wing-spots are larger. The streaks of the under parts are much more pronounced in the southern birds. The Yangtse and Chihli birds have the

abdomen practically unstreaked. The barring of the side rectrices is a variable and individual feature in both forms. The wing-measurements in my series are as follows:—

Fohkien birds (<i>kaleensis</i>)	♂ 3·95–4·11 in.	♀ 3·99–4·18 in.
Yangtse birds (<i>scintiliceps</i>)	♂ 3·80–4·01 in.	♀ 3·98–4·15 in.
Chinwangtao birds (<i>scintiliceps</i>). . .	♂ 4·01–4·15 in.	♀ 4·15–4·01 in.

The Spark-headed Woodpecker was common in February 1890 in the mountains of the Liautung Peninsula, where I collected several examples.

143. *Iynx torquilla* L.

Iynx torquilla D. & O. p. 55.

Iynx torquilla La T. p. 576.

The Wryneck is a common migrant in north-east Chihli. It passes during the last week in April and in May until about the 20th of that month. The autumn passage is short and takes place at the end of August and beginning of September. I have seen the bird at that season from the 29th of August to the 5th of September, and once only on the 16th of September, and on the 24th of September (1916).

144. *Alcedo ispida bengalensis* Gm.

Alcedo bengalensis D. & O. p. 74; La T. p. 576.

The Common Kingfisher arrives in May, probably early in the month, and is not uncommon during the summer. I have three eggs taken at Hsieh Chia Ying marshes on the 8th of July and four on the 10th of the same month. They vary in length from 0·80 to 0·82 in., and in breadth from 0·70 to 0·72 in., and average 0·81 × 0·707 in.

145. *Eurystomus orientalis calonyx* Sharpe.

Eurystomus orientalis D. & O. p. 73.

I saw a Broad-billed Roller at Chinwangtao on the 5th of September, 1917, the only one seen there during a seven years' stay in that locality. An immature male shot near Shanhaikuan in September 1918 was subsequently sent to me.

146. *Upupa epops* L.

Upupa epops D. & O. p. 79 ; La T. p. 576.

The Hoopoe is one of the most conspicuous spring migrants at Chinwangtao, and may be seen commonly at that season from about the middle of March to well on in May. In 1912 I saw it from the 11th of March to the 13th of May. In 1913 the collectors saw three on the 31st of May, but these were probably local breeding birds. The occurrence of this bird at the port during the return passage is apparently irregular. I saw one on the 3rd of August, 1911, none in 1912. In 1913 I saw one on the 13th and on the 17th of August and three on the 22nd of the same month in 1914, one on the 18th of August, and one on the 20th of August, 1916. In 1911, one was shot inland on the 15th of November. It is probable that a few remain here all the year round.

The Hoopoe is found on the plains in southern Manchuria during the summer.

147. *Cypselus apus pekinensis* Swinhoe.

Cypselus pekinensis D. & O. p. 68 ; La T. p. 576.

The North China Swift breeds at Peking, Tientsin, and Shanhaikuan. At the latter place it nests in holes of the city wall. It arrives there towards the end of April. The appearance of this Swift at Chinwangtao is irregular. I have seen a few during May and in summer which were probably visitors from Shanhaikuan. It probably leaves early on its return to the south, as on the 25th and 27th of July, 1915, I saw some at the port which were evidently migrating.

148. *Cypselus pacificus* Lath.

Cypselus pacificus D. & O. p. 69 ; La T. p. 576.

The Large White-rumped Swift passes Chinwangtao in spring from mid-April to early in June. During the month of June and throughout the summer, more or less large flocks appear often at the port, coming from an easterly or north-easterly direction, and remain hawking over the island sometimes all day. The usual time of their coming, however, is in the late afternoon. It is evident that these are

summer visitors breeding somewhere in this vicinity. Large numbers of migrants pass from about the middle of August to the last ten days of September.

149. *Acanthyllis caudacuta* Lath.

Chætura caudacuta D. & O. p. 70.

A few Spine-tailed Swifts pass in September. I saw a couple on the 17th of September, 1911, flying in company with swallows, wagtails, and white-rumped swifts, another on the 13th of September, 1914, and one on the 17th of September, 1916.

150. *Caprimulgus indicus jotaka* T. & S.

Caprimulgus jotaka D. & O. p. 67 ; La T. p. 577.

The Japanese Nightjar passes regularly in spring from about the middle of May to the beginning of June (latest record 10 June). I have seen a few examples during the autumn passage at the end of August and in September (earliest record 27 August, 1915, latest record 21 September, 1912, or possibly 26 September, 1915).

I saw an example of this Nightjar on the plain near Newchwang on the 26th of May, 1889, and noticed the bird also that year in August.

151. *Cuculus canorus telephonus* Heine.

Cuculus canorus D. & O. p. 65 ; La T. p. 577.

The Common Cuckoo arrives in May. I heard it calling at the hills on the 21st of May, 1911, and in 1913 it was seen as early as the 11th of that month. I shot one on the 2nd of June, 1912, and saw others on the same day. It most probably breeds in this district. I saw Cuckoos on the 25th and 27th of August and 7th of September in the country and at Chinwangtao itself on the 3rd of September, which from their size appeared to be of this species. A young male, shot about the 1st of September, has a wing-measurement of 8.25 in. The upper parts are dark brown, barred with rufous except on the rump and upper tail-coverts which are rufous and grey, most of the feathers are fringed

with white or whitish. There is a white spot on the nape. From the chin to the breast the feathers are edged with blackish, more broadly on the chin and throat.

A young bird was brought to me from the hills on the 15th of July, 1917, which, so its captor told me, had been taken from a Meadow-Bunting's (*Emberiza cioides*) nest. The upper parts were ashy brown, each feather narrowly edged with white. There was a white spot over one eye and one on the occiput. The throat was white barred with black, the rest of the under parts was buffy white, narrowly barred with blackish grey, the sides of the head were speckled with white. Legs orange-flesh, bill greenish black, gape and base of lower mandible yellow, mouth orange-vermilion, iris brown. On the 21st of July it could fly quite well. I fed it on minced or chopped raw beef, green-bean paste and bread and milk, its favourite food being raw beef. On the 24th it was getting quite wild and showed a desire to pick up its food unaided. On the 26th it fed unassisted and when approached would peck at one's fingers and fly off. I released it on the 5th of August, when it flew well. On this day the iris of this bird was greyish brown, the rim of the eyelid was greenish grey, the bill orange-flesh with the culmen and the point of the lower mandible dark green, the mouth was orange-red. The bird had been wild for some days, fiercely pecking at one's hand and flying off without touching the food offered to it so long as it was held in one's fingers.

152. *Cuculus saturatus* Hodgson.

Cuculus striatus D. & O. p. 65.

I found on the beach at the port on the 7th of June, 1911, an almost skeletonized specimen in hepatic plumage of the Himalayan Cuckoo. Wing 7.35 in. The specimen was sent to the Natural History Museum. Another example, a female in hepatic plumage also, wing 7.80 in., was shot here on the 29th of August, 1913. It agrees fairly well in all but size with a female from Fohkien.

I am indebted to Mr. A. de C. Sowerby for the loan of an

adult female example shot by him in southern Manchuria (Fengtien Province) on the 3rd of June. The wing of this bird measures 7·13 in.

153. *Asio otus* (L.).

Otus vulgaris D. & O. p. 41.

Asio otus La T. p. 577.

The Long-eared Owl is a very common migrant at Chinwangtao during spring. It passes at that season during the last ten days of March until the last week of April. It is again seen throughout October and November. I saw one at the port on the 9th of December, 1913.

154. *Asio accipitrinus* (Pallas).

Otus brachyotus D. & O. p. 41.

I have an example of the Short-eared Owl shot in the autumn of 1912, and another shot out of a party of nine or ten flushed out of a patch of grass on the plain on the 15th of November, 1914. The latter birds were evidently accompanying the larks which passed that day in immense flocks. The one I shot had breakfasted off one of the larks. I have no other certain records, and this Owl, although probably common enough, is certainly rarer here than in south-east China, where it is a very common winter visitant. The Long-eared Owl, on the contrary, is quite a rarity in Fohkien.

155. *Bubo ignavus* subsp.

Bubo maximus D. & O. p. 39.

The Great Eagle-Owl is a common resident. It appears on the plains in winter, where I shot one on the 10th of November. The natives often shoot this bird in winter and bring the skins to the port for sale.

The Great Eagle-Owl is a common resident in southern Manchuria.

156. *Nyctea scandiaca* L.

A handsome male example of the Snowy Owl was shot close to Chinwangtao on the 16th of December, 1916. The flanks and scapulars are barred with brown, and the wings,

tail, and upper parts are sparsely spotted with the same. Iris bright yellow, rim of eyelids blackish brown, bill and claws greyish brown, mouth pink, soles of feet white. Wing 16.5 in., tail 8.8 in., total length 23 in.

The Snowy Owl has not previously been recorded from China. The above-mentioned specimen had probably been driven south by bad weather, as shortly after its capture the weather, which had till then been mild for the season, turned suddenly cold and severe gales with a heavy snowfall then prevailed over North China and the North Pacific.

157. *Otus scops stictonotus* (Sharpe).

Scops stictonotus D. & O. p. 42.

The Chinese Little Scops Owl is not uncommon on passage. I have several local examples: one shot on the 15th of September at the port and the others dated 14 September, early October, and 8 May, from Shanhaikuan and a short way inland of Chinwangtao.

This little Owl passes Newchwang in May.

158. *Athene noctua plumipes* Swinhoe.

Athene plumipes D. & O. p. 37.

Swinhoe's Owlet is common in winter on the plain.

I obtained a live example at Newchwang in 1899, which was brought to Europe and eventually found a home at the Zoological Gardens in London.

159. *Ninox scutulata* (Raffles).

Ninox scutulata D. & O. p. 36.

Ninox japonica La T. p. 577.

An example of the Brown Hawk-Owl was shot by the collectors on the 16th of May, 1913. I believe that I saw one at Shanhaikuan on the 10th of October, 1914, and I saw another at Chinwangtao.

This Owl passes Newchwang in May.

160. *Pandion haliaëtus* (L.).

Pandion haliaëtus D. & O. p. 14.

The Osprey is occasionally seen passing on migration. I have only two spring records: one (uncertain) 21st of

April, and one bird seen flying over the big pond at the back of the port on the 17th of May, 1916. It passes also during September and October, and one was noticed on the 13th of November, 1911.

161. *Aquila chrysaëtos* (L.).

Aquila chrysaëtus D. & O. p. 7.

A handsome immature female example of the Golden Eagle was brought to me on the 21st of November, 1915. It had just been shot a few miles outside the Great Wall, north-east of Shanhaikuan. The soft parts were as follows: Iris hazel brown; cere and gape pale yellow; bill horn-colour, blue at the base; feet pale yellow. Its proportions are: Bill from gape 2·5 in.; wing 24·80 in.; tail 12·80 in.; tarsus 4·50 in.; total length, 33 in. The tail is white or grey with a broad terminal black band. The skin of an adult was offered to me for sale on the 11th or 12th of April, 1916. The tail in this specimen was grey, waved with brown. Père David mentions the Golden Eagle as being common in the mountains of Chihli. It is doubtless a resident in this part of the province.

162. *Aquila nipalensis* Hodgson.

Aquila clanga D. & O. p. 9.

I have an example of what I take to be the Eastern Steppe Eagle, from Chihfeng in outer Chihli, for which I am indebted to Mr. A. L. Hall. This bird is apparently adult. The tail is obsoletely barred with greyish. In its dry state the bill is blackish, the cere yellow, feet pale yellow. The nostrils are oblong and obliquely pierced. The proportions are as follows:—Bill from gape 2·9 in.; culmen from cere 1 in.; wing 24 in.; tail (worn) 11·5 in.; tarsus 3·7 in.; middle toe without claw 2·5 in.

163. *Aquila clanga* Pallas.

Aquila nevia D. & O. p. 11.

Aquila clanga La Touche, Ibis, 1907, p. 11.

On the 6th of October, 1912, I bought a live example of this Eagle from the hawk-catcher at the marshes, and after

taking its description and measurements released it. It was in the deep purplish brown and spotted plumage of the immature bird. The iris was dark brown, the cere and feet yellow, the bill leaden-blue tipped darker; the wing measured 19·4 in. I saw another on the 12th of October, 1913, at the marshes, and shot, but failed to secure, what was presumably a third example on the 16th of September, 1915.

164. *Butastur indicus* (Gm.).

Butastur indicus D. & O. p. 18; La T. p. 577.

My collectors saw the Grey-faced Buzzard-Hawk in 1913, on the 2nd and 7th of May. I believe that I saw one migrating along the dunes by the seashore on the 20th of September, 1914. Père David says that it breeds in the mountains near Peking.

165. *Haliaëtus albicilla* (L.).

Haliaëtus albicilla D. & O. p. 12.

The White-tailed Sea-Eagle is a common migrant in spring and autumn. I have an immature bird shot on the 6th or 7th of March and an adult female example shot outside the Great Wall towards the middle of December, 1915, so that some probably winter in north-east Chihli. The measurements of this bird are: Total length 33·6 in.; wing 26·5 in. Bill, cere, and legs yellow.

The local hawk-catchers use this Eagle as a decoy, pegging the bird down at their nets. The owner of two of these birds told me that he fed them in summer on fish and in winter on puppy dogs!

166. *Milvus melanotis* T. & S.

Milvus melanotis D. & O. p. 16; La T. p. 577.

An important migration of the Black-eared Kite goes on during spring and especially in the autumn. My earliest spring record is the 23rd of February, 1913, when I saw one flying up the coast, but the bulk of the migrants pass in April. The autumn passage goes on throughout September and until the middle of October. Numbers of these birds are taken at this season by the hawk-catchers. Those which

I saw were all immature birds in spotted plumage. A few summer here in suitable spots.

167. *Circus cyaneus* (L.).

Circus cyaneus D. & O. p. 27; La T. p. 577.

The Hen Harrier passes during April and again at the end of September and during October. A few winter in the vicinity. Adult males are often seen in autumn.

168. *Circus melanoleucus* (Forster).

Circus melanoleucus D. & O. p. 29; La T. p. 577.

The Pied Harrier passes in April and May and again from the end of August to perhaps the middle of October. It is by far the most abundant of all the Harriers in this part of Chihli and is often seen travelling in parties. Adults are quite common.

On the 25th of September, 1912, while out duck-shooting at the marshes, I chanced on a number of Harriers which were fishing (for frogs presumably) after sunset by moonlight. I did not ascertain the species. On the 12th of September, 1915, I noticed another such gathering of Harriers at the marshes at sundown. The birds on this occasion were, I believe, Pied Harriers.

This Harrier was noticed by me on the plains near Newchwang during June.

169. *Circus æruginosus* (L.).

Circus æruginosus D. & O. p. 30.

The Marsh Harrier is extremely abundant during September and until well on into October.

My first list of Chinwangtao birds (Customs Decennial Reports, 1902-11, Chinwangtao Report, p. 173; Shanghai, 1913) mentions *C. spilonotus*, but I find that I have no certain records of this bird and therefore omit it in the present paper.

170. *Buteo buteo japonicus* (T. & S.).

Buteo japonicus D. & O. p. 19.

Buteo plumipes La T. p. 577.

The Common Buzzard passes in spring from February to May and abundantly during September and October, as also I believe in November. Père David writes of it as being rare at Peking, so that probably in North China it passes chiefly along the coast. I saw one at sea on the 7th of November, 1910, which settled on board the steamer we were travelling on, the position of the vessel being about thirty miles north of Modeste Island.

171. *Buteo ferox hemilasius* T. & S.

Buteo hemilasius D. & O. p. 19 ; La T. p. 577.

The White-tailed Buzzard passes during March and April and in October and November. I have seen examples used as decoys by the hawk-catchers, who capture many during times of passage. A fine specimen purchased from one of these men is entirely brown with the exception of the head. The soft parts of this bird were:—Iris pale straw-yellow mixed with a little hazel; legs dirty yellow. The amount of feathering on the tarsus of this bird is very variable, sometimes the whole front of the tarsus is feathered and in other specimens quite a third of the tarsus is bare.

172. *Astur palumbarius schvedowi* Menzbier.

Astur palumbarius D. & O. p. 23 ; La T. p. 578.

I saw on the 21st of March, 1913, a freshly shot example in the market, and on the 23rd of January, 1916, I purchased in the market a fresh native skin of a fine adult bird, female by size, which was made into a handsome specimen. Wing 14.10 in.

I have seen on several occasions during autumn small Hawks passing which were probably *Astur soloensis* or *A. cuculoides*, but have not so far procured specimens.

173. *Accipiter nisus* (L.).

Accipiter nisus D. & O. p. 27 ; La T. p. 578.

The Common Sparrow-Hawk passes in April and May and from the middle of September to the end of November.

A number winter in the vicinity. It is, as elsewhere in China, a very common bird. The female is much used by natives for hawking quail in autumn. The birds, when not fully trained, are flown with a string attached to their jesses. The string is neatly wound on a bobbin enclosed within an open wire case. The falconers generally go in couples or small parties; one man beating the cover with a stick. On a bird being flushed the hawk is thrown at it and almost always catches the quarry after a very short flight. The hawks are not hooded. One of these trained hawks, which had escaped, once attacked some caged birds which were hanging in our verandah and was easily captured by offering it some food. After attempting to snatch the meat from my hand and to fly away with it, it settled on a portion of a hare I was holding out and was thus caught.

174. *Accipiter gularis* T. & S.

Accipiter virgatus D. & O. p. 26 (part).

The Japanese Sparrow-Hawk appears to be common during September and the early half of October. It is often caught by the natives and trained to catch quail and small birds. A live example was obtained on the 2nd of September, 1915. It was a young male of the year with the under parts deeply tinged with buff. The iris was of a yellowish emerald-green.

175. *Pernis apivorus orientalis* Tacz.

Pernis apivorus D. & O. p. 18.

Pernis elliotti La Touche, Ibis, 1913, p. 279.

An old, much torn skin of a Honey-Buzzard was seen on the 21st of March, 1913, hanging in a shop in the market. I did not examine it closely, but it appeared to be the skin of an Indian Honey-Buzzard, which is the species found on the China coast and no doubt also in Japan. I saw at Chinwangtao, on the 16th of September, 1912, and again four days afterwards, large hawks flying overhead which I took to be Honey-Buzzards. I saw another at the marshes on the 16th of September, 1915, which appeared to be the same.

176. *Falco cherrug milvipes* Jerdon.

Falco saker D. & O. p. 31.

Falco sacer La T. p. 578.

The Shanghar Falcon passes in spring and in October and November. It most probably winters in north-east Chihli. This Falcon is a favourite decoy bird at the hawk-catchers' nets. The lure employed to catch this bird is a live pigeon pegged down near the concealed net. A few of these Falcons are caught every year and are held in high esteem by Chinese falconers. They are used for hawking hares. Two birds are generally flown together.

177. *Falco peregrinus* L.

Falco communis D. & O. p. 32.

Falco peregrinus La T. p. 578.

The Peregrine passes Chinwangtao in April, May, and June. It is probable, however, that those seen during the latter month are summer visitants. It is seen also in autumn until well into November. I have also seen this Falcon pegged out at the hawk-catchers' nets, and it is valued for hawking purposes.

178. *Falco subbuteo* L.

Falco subbuteo D. & O. p. 33; La T. p. 578.

A few Hobbies were noted in 1913 from the 16th to the 20th of May.

179. *Æsalon regulus* (Pallas).

Falco æsalon D. & O. p. 34.

Æsalon regulus La T. p. 578.

The Merlin passes in March and April and again from September to December. Some probably winter in the district.

180. *Erythropus vespertinus amurensis* (Radde).

Falco amurensis D. & O. p. 34.

Erythropus amurensis La T. p. 578.

The Eastern Red-legged Falcon is a very common summer visitant in the district. It arrives in the latter half of April,

and some are to be seen until the end of October. Twenty-eight eggs, some fresh, others more or less incubated, were brought to me from the mountains, north of Chinwangtao, on the 25th of June, 1917, and a clutch of three, slightly incubated, from the same locality on the 2nd of July following. I saw on the 16th of September, 1915, numbers travelling along the sea-shore, hovering and feeding on the dunes as they passed by.

181. *Cerchneis tinnunculus japonicus* (T. & S.).

Falco tinnunculus D. & O. p. 36 (part).

Cerchneis japonicus La T. p. 578.

The Japanese Kestrel passes in spring and in September and October. A few winter in the vicinity. Some breed in the mountains to the north of Chinwangtao. A clutch of four slightly incubated eggs was brought to me with the female on the 3rd of May, 1917.

[To be continued.]

XXXIV.—*Some preliminary remarks on the Altitude of the Migratory Flight of Birds, with special reference to the Palearctic Region.* By Col. R. MEINERTZHAGEN, D.S.O., M.B.O.U., F.Z.S.

A GREAT deal has been written on this little-known subject, but in nearly all cases theories have been advanced which have been supported by unsatisfactory evidence, or by evidence of a very scanty nature.

Let us see what evidence is available.

Gietke affirms that the altitude of migratory flight under normal conditions is so great as to be completely beyond the powers of human observation, whilst he regards such portions of it as are brought within our notice as disturbances and irregularities of the migratory movement. In other words, he considers visible migration to be abnormal and invisible